

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A security article having a multicoloured image and which comprises:
a first layer of transparent polymeric material carrying parts of an image
formed in a first colour;
5 at least one other layer of transparent polymeric material carrying parts of
said image formed in at least one different colour;
wherein the layers are laminated together with the parts of the image
formed in the first and different colours superposed one over another, so that the
colours combine to form a multicoloured image in the laminated security article,
10 the multicoloured image being viewable from both sides of the security article.
2. A security article according to claim 1 wherein the multicoloured image is
formed by first and second superposed parts of the image in different colours in
first and second layers.
3. A security article according to claim 2 further comprising a third layer of
15 transparent polymeric material carrying parts of an image formed in a third colour.
4. A security article according to any one of claims 1 to 3 wherein the colours
of the image formed in the layers are primary or complementary colours.
5. A security article according to any one of claims 1 to 4 further comprising
an additional layer of transparent polymeric material carrying parts of the image
20 formed in a dark colour to provide more depth and definition to the multicoloured
image.
6. A security article according to claim 5 wherein the dark colour is black.
7. A security article according to any one of claims 1 to 6 wherein the parts of
the image formed in the layers are indelible.
- 25 8. A security article according to claim 7 wherein the parts of the image
formed by the different colours are formed in the different layers by laser marking.

9. A security article according to claim 7 or claim 8 wherein at least one of the layers comprises a transparent polymeric film or substrate in which a respective part of the image is embedded.

5 10. A security article according to claim 7 or claim 8 wherein at least one of the layers comprises a transparent polymeric substrate having a transparent polymeric film or coating on at least one surface in which a respective part of the image in colour is embedded.

10 11. A security article according to any one of claims 8 to 10 wherein the parts of the image formed in different colours in the respective layers are embedded within the layers by using layers of transparent polymeric material each containing a respective latent colour forming pigment which is developed by exposure to laser radiation.

12. A security article according to any one of the preceding claims wherein at least one of the layers includes alphanumeric information.

15 13. A security article according to any one of the preceding claims further including any one or more of the following:

shadow images; or

images printed with optically variable inks; or

front to back registration images.

20 14. A security article according to any one of the preceding claims wherein the security article is adapted to be secured to another article.

15. A security article according to any one of the preceding claims wherein the multicoloured image is a photograph of the bearer of the article.

25 16. A security article according to claim 15 wherein the article forms a part of a passport or other identification document.

17. A passport incorporating a security article according to claim 15 wherein the article forms at least part of a page of the passport such that the photograph of the bearer of the passport is viewable from both sides of the page.

18. A passport according to claim 17 wherein the passport is a booklet which
5 includes at least one opaque page next to the page incorporating the photograph.

19. A method of manufacturing a security article having a multicoloured image, wherein the method comprises:

providing a first layer of transparent polymeric material;
providing at least one other layer of transparent polymeric material;
10 forming parts of an image in a first colour in or on the first layer;
forming parts of said image in at least one different colour in or on said at least one other layer; and
laminating the layers together to form a laminated security article;
wherein, in the laminated security article the parts of the image formed in
15 the first and different colours are superposed one over another so that the colours combine to form a multicoloured image which is viewable from both sides of the laminated security article.

20. A method according to claim 19 wherein the multicoloured image is formed by first and second superposed parts of the image in different colours in first and
20 second layers.

21. A method according to claim 20 wherein the first and second layers are laminated before the parts of the image are formed in the different colours in the respective layers.

22. A method according to claim 20 wherein the first and second layers are
25 laminated after the parts of the image are formed in the different colours in the respective layers.

23. A method according to any one of claims 19 to 22, the method further comprising the steps of:

providing a third layer of transparent polymeric material; and
forming parts of the image in a third colour in or on the third layer.

24. A method according to any one of claims 19 to 23 wherein the colours of the image formed in the different layers are primary or complementary colours.

5 25. A method according to any one of claims 19 to 24, the method further comprising the steps of:

providing a further layer of transparent polymeric material; and

forming parts of an image in a dark colour in or on the further layer
whereby the dark colour provides more depth and definition to the multicoloured
10 image.

26. A method according to claim 25 wherein the dark colour is black.

27. A method according to any one of claims 19 to 26 wherein the parts of the image formed in the different colours are applied to the different layers by a laser marking process.

15 28. A method according to claim 27 whereby the image to be formed in the laminated security article is scanned by software into a digital image and separated into individual primary or complementary colours, before the laser marking process.

20 29. A method according to claim 27 or 28 whereby the laser marking process includes the steps of:

applying the parts of the image formed in the first colour to the first transparent layer;

applying the parts of the image formed in the second colour to the second transparent layer; and optionally

25 applying the parts of the image formed in other different colours to third and any subsequent layers.

30. A method according to any one of claims 19 to 22 whereby the different parts of the image in different colours are embedded within the respective layers of transparent polymeric material.

31. A tamper evident security article having a multicoloured image and which
5 comprises:

a first layer of transparent polymeric material containing parts of an image formed in a first colour embedded within said first layer;

at least one other layer of transparent polymeric material containing parts of said image formed in at least one different colour embedded within said at least
10 one other layer;

wherein the layers are laminated together with the parts of the image formed in the first and different colours superposed one over another, whereby the colours combine to form a multicoloured image in the laminated security article.

15 32. A tamper evident security article according to claim 31 wherein at least one of the layers comprises a transparent polymeric film or substrate in which a respective part of the image is embedded.

33. A tamper evident security article according claim 31 wherein at least one of the layers comprises a transparent polymeric substrate having a transparent
20 polymeric film or coating on at least one surface in which a respective part of the image in colour is embedded.

34. A tamper evident security article according to any one of claims 31 to 33 wherein the parts of the image formed in different colours in the respective layers are embedded within the layers by using layers of transparent polymeric material
25 each containing a respective latent colour forming pigment which forms a colour marking when exposed to laser radiation.

35. A tamper evident security article according to claim 34 wherein the thickness of each layer of the polymeric material falls substantially within the range from about 20 microns to about 200 microns.

36. A tamper evident security article according to claim 34 or claim 35 wherein a thin layer of a low melting point polymer is co-extruded onto one or both sides of a polymer base film to form at least one of the layers in which a colour forming material is provided.

5 37. A tamper evident security article according to claim 36 wherein the colour forming material is provided in the polymer base film.

38. A tamper evident security article according to claim 36 wherein the colour forming material is provided in the co-extruded layer.

10 39. A tamper evident security article according to any one of claims 36 to 38 wherein the thin co-extruded layer has a thickness falling substantially within the range from about 2 microns to about 50 microns.

15 40. A tamper evident security article according to any one of claims 34 to 39 wherein the co-extruded layer is formed from any one of metallocene polyethylene, random co-polymers or ter-polymers of ethylene, butylene or propylene.

41. A tamper evident security article according to any one of claims 34 to 40 wherein the latent colour forming pigments are present in the layers of transparent polymeric material in a concentration falling substantially within the range from about 0.2% to about 0.5% by weight of the polymeric material.

20 42. A tamper evident security article according to any one of claims 31 to 41 wherein the article is adapted for attachment to another article.

25 43. A tamper evident security article according to any one of claims 31 to 42 further including an opaque layer on one side of the transparent layers containing parts of the image in different colours, so that the multicoloured image in the laminated security article is only visible in reflection from one side of the article.

44. A tamper evident security article according to any one of claims 31 to 43 wherein at least one of the layers includes printed information.

45. A tamper evident security article according to any one of claims 31 to 44 further including one or more of:

- 5 printed shadow images; or
 images printed with optically variable inks; or
 front to back registration images.

46. A method of manufacturing a tamper evident security article having a multicoloured image, wherein the method comprises:

- 10 providing a first layer of transparent polymeric material containing a first latent colour forming material;
 providing at least one other layer of transparent polymeric material containing a different latent colour forming material;
 forming parts of an image in a first colour by exposing the at least one
15 other layer to laser radiation to develop the latent colour forming material in the first layer;
 forming parts of the image in a different colour by exposing said at least one other layer to laser radiation to develop the different latent colour forming material in said at least one other layer; and
20 laminating the layers together with the parts of the image formed in the first and different colours superposed one over another, whereby the colours combine to form the multicoloured image in the laminated security document.

47. A method according to claim 42 wherein the laser radiation causes colour marking by development of the latent colour forming materials without causing
25 melting or abrasion of the polymeric materials.

48. A method according to claim 46 or claim 47 wherein the layers of polymeric material containing the latent colour forming pigments are produced by premixing a batch of polymer which is blended with the respective latent colour forming material.

49. A method according to any one of claims 46 to 48 wherein the laser radiation is provided by one of the following:

a beam deflection technique;

a vector process;

5 a mask technique; or

a dot matrix technique.

50. A method according to any one of claims 46 to 49 wherein a laminating layer is applied between adjacent layers of transparent polymeric material containing the colour forming material.

10 51. A method according to claim 50 wherein the laminating layer is formed from a low melting point polymer or a heat and/or pressure sensitive adhesive and heat and/or pressure is used to laminate the layers of polymeric material together.

15 52. A method according to any one of claims 46 to 51 wherein the colours formed by the latent colour forming materials in the first and other layers are primary or complementary colours.

53. A method according to claim 52 further including the steps of:

providing a further layer of transparent polymeric material containing a dark colour forming material;

20 forming parts of the image in the dark colour by exposing said further layer to laser radiation; and

laminating said further layer to the other layers with the parts of the image formed in the dark colour superimposed over the parts of the image formed in the different colours to provide more depth and definition to the multicoloured image.

25 54. A method according to claim 52 or claim 53 wherein the image to be formed in the tamper evident security article is scanned by software into a digital image and separated into individual primary or secondary colour components corresponding to the colour forming materials in the layers, and laser writing

software uses the separated colour components to develop the colour forming materials in the respective layers.

55. A method according to any one of claims 46 to 54 further including the step of applying alphanumeric information to at least one of said layers.

5 56. A method according to any one of claims 46 to 54 further including the step of providing a least one security feature on at least one of the layers, the security feature being destroyed or damaged when the security article is delaminated.

57. A method according to claim 56 wherein the at least one security feature comprises any one or more of the following:

- 10 a shadow image;
 an image printed with optically variable inks; and
 a front to back registration image.